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10/022,235	12/20/2001	Takeshi Matsunaga	111510	4205

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EXAMINER	
LEWIS, DAVID LEE	
ART UNIT	**PAPER NUMBER**
2629	

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/022,235	MATSUNAGA ET AL.	
	Examiner	Art Unit	
	David L. Lewis	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. **Claims 1 and 3-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gates et al. (6531997 B1) in view of Inoue (JP 401086116A).**

As in claim 1, Gates et al. teaches of a image display device comprising: an image display medium which includes a display substrate, a rear substrate, **column 13 lines 50-52**, wherein either substrate refers to a display and rear corresponding to the display and rear electrodes

display side electrodes which are linearly disposed at a side of the display substrate in a predetermined direction, **column 14 lines 4-11 and 50-53, column 26 lines 1-13,**

rear side electrodes which are linearly disposed at the side of a rear substrate in a direction intersecting the predetermined direction, **column 14 lines 4-11 and**

50-53, column 26 lines 1-13, wherein the electrodes are provided in a matrix addressing scheme which includes intersecting electrodes.

and plural types of colored particles each having different charging characteristics, which are interposed so as to be movable between the display side electrodes and the rear side electrodes, **column 24 lines 5-25**; wherein the red, blue, and green electrophoretic particles have different mobilities.

and a voltage applying component by which a voltage is applied to display side electrode and a rear side electrode, both selected to contribute to an image display, to generate there between a potential difference which triggers particle movement, **figure 3D item 4**, column 19 lines 14-32, wherein the applied voltage causes the display change from figure 3A to figure 3C.

and a voltage is applied to at least one of a display side electrodes and to a rear side electrode, in which at least one of the display side electrodes and the rear side electrode is not selected to contribute to the image display, to generate there between a potential difference which is smaller than the potential difference which triggers particle movement, thereby inhibiting a movement of particles at least one of towards and away from an electrode not selected to contribute to the image display **figure 3F item 18, column 19 lines 33-45**. Wherein a negative pulse 18 does not have sufficient amplitude to cause the particles 50 to move

within capsule 20, and therefore a voltage which does not contribute to display is provided.

wherein the voltage applying component applies a voltage to the display side electrodes and the rear side electrodes such that a potential difference between the display side electrodes contributing to image display and the display side electrodes not contributing to the image display, **figure 9A item Vcom=V/2**, is smaller than a potential difference between the rear side electrodes contributing to the image display and the rear side electrodes not contributing to the image display, **figure 9A item 102 = 0 or V**, thereby further inhibiting a movement of particles between the display side electrodes contributing to image display and the display side electrodes not contributing to the image, **column 26 lines 40-65, column 27-10**. Wherein Gates teaches of a common electrode 100 on a display side and discrete electrodes 104 or 106 on a rear side, wherein the voltage difference on the display side is V/2 and the voltage difference on the rear side is V, and therefore the display side difference is smaller because V/2 is smaller than V.

However Gates et al. only implicitly suggests the existence of a second or display substrate, **column 13 lines 50-53, and does the explicitly teaches of** said display substrate by way of illustration.

Inoue et al. teaches of said display, and rear electrode, figure 1 item 1, in the same particle based display as taught by Gates, wherein said implicit **display substrate feature would have been obvious** to the skilled artisan given its known use in the art as taught by Inoue et al., as found in claim 1.

Therefore it would have been obvious to the skilled artisan at the time of the invention to provide that Gates teaches of a second substrate as well known in the art and taught by Inoue et al., because Gates uses the term "either substrate", and Inoue teaches devices as taught by Gates are known to have two substrates, as found in claim 1.

As in claim 3, Gates et al. teaches of, further comprising a pre-voltage applying component which, before the voltage applying component applies a voltage, applies a pre-voltage to both the display side electrodes and the rear side electrodes so as to attract particles to be moved to the electrodes on which the particles are adhering, column 18 lines 5-15, column 28 lines 55-65, pre-addressing or blanking.

As in claim 4, Gates et al. teaches of, the pre voltage applying component applies the pre-voltage, in a case that a potential difference between the display side electrodes and the rear side electrodes, in which at least one of the display side electrodes and the rear side electrodes do not contribute to image display,

exceeds a predetermined value when the voltage applying component applies a voltage, figure 9A item 102 = 0 or +V.

As in claim 5, Gates et al. teaches of, wherein a value of the voltage applied by the pre-voltage applying component is the same as a value of the voltage which corresponds to the potential difference which triggers particle movement, figure 3D items 2 and 4.

As in claim 6, Gates et al. teaches of, wherein the types of particles comprise positively charged black particles and negatively charged white particles, column 15 lines 44-46.

As in claim 7, Gates et al. teaches of a image display device comprising: an image display medium which includes a display substrate, a rear substrate, **column 13 lines 50-52**, wherein either substrate refers to a display and rear corresponding to the display and rear electrodes

display side electrodes which are linearly disposed at a side of the display substrate in a predetermined direction, **column 14 lines 4-11 and 50-53, column 26 lines 1-13**,

rear side electrodes which are linearly disposed at the side of a rear substrate in a direction intersecting the predetermined direction, **column 14 lines 4-11 and 50-53, column 26 lines 1-13**, wherein the electrodes are provided in a matrix addressing scheme which includes intersecting electrodes.

and plural types of colored particles each having different charging characteristics, which are interposed and movable between the display side electrodes and the rear side electrodes, **column 24 lines 5-25**; wherein the red, blue, and green electrophoretic particles have different mobilities.

Further, Gates et al. teaches and a voltage applying component by which a voltage is applied to a display side electrode and a rear side electrode, both selected to contribute to an image display, to generate there between a potential difference which triggers particle movement, **figure 3D item 4**, column 19 lines 14-32, wherein the applied voltage causes the display change from figure 3A to figure 3C,

and by which a voltage is applied to a rear side electrode not selected to contribute to the image display to generate a potential difference which is smaller than the potential difference which triggers particle movement between the rear side electrodes and a display side electrodes not selected to contribute to the image display, **figure 9 item V/2, column 19 lines 45-65**,

and between the rear side electrodes and a display side electrodes selected to contribute to the image display, thereby inhibiting a movement of particles at least one of towards and away from an electrode not selected to contribute to the image display, **figure 9A item 102 = 0, column 28 lines 30-65, column 19 lines 45-65**.

wherein the voltage applying component applies a voltage to the display side electrodes and the rear side electrodes such that a potential difference between the display side electrodes contributing to image display and the display side electrodes not contributing to the image display, **figure 9A item Vcom=V/2**, is smaller than a potential difference between the rear side electrodes contributing to the image display and the rear side electrodes not contributing to the image display, **figure 9A item 102 = 0 or V**, thereby further inhibiting a movement of particles between the display side electrodes contributing to image display and the display side electrodes not contributing to the image, **column 26 lines 40-65, column 27-10**. Wherein Gates teaches of a common electrode 100 on a display side and discrete electrodes 104 or 106 on a rear side, wherein the voltage difference on the display side is V/2 and the voltage difference on the rear side is V, and therefore the display side difference is smaller because V/2 is smaller than V.

Wherein a pre-addressing, addressing, pre-blanking, and blanking, voltage component are achieved by a voltage source having three voltage values 0, V/2, and V, which are applied between the Vcom on the display side and discrete electrodes on the rear side of the display. Figures 3, 9, and 10 illustrate as such. Said pre-addressing voltage conditions the display but does not cause a particle migration. Said addressing component can be applied before or after the non particle migration voltage component. As shown in figure 3, Gates illustrates the voltage differential applied between the first and second electrodes, causing the particles to migrate.

However Gates et al. only implicitly suggests the existence of a second or display substrate, **column 13 lines 50-53, and does the explicitly teaches of** said display substrate by way of illustration.

Inoue et al. teaches of said display, and rear electrode, figure 1 item 1, in the same particle based display as taught by Gates, wherein said implicit **display substrate feature would have been obvious** to the skilled artisan given its known use in the art as taught by Inoue et al., as found in claim 1.

Therefore it would have been obvious to the skilled artisan at the time of the invention to provide that Gates teaches of a second substrate as well known in the art and taught by Inoue et al., because Gates uses the term "either

substrate", and Inoue teaches devices as taught by Gates are known to have two substrates, as found in claim 7.

As in claim 8, Gates et al. teaches of wherein the voltage applying component applies substantially the same voltage to both the display side electrodes which contribute to image display and the rear side electrodes which do not contribute to image display, figure 3D items 2 and 4.

As in claim 9, Gates et al. teaches of further comprising a pre-voltage applying component which, before the voltage applying component applies a voltage, applies a pre-voltage to both the display side electrodes and the rear side electrodes so as to attract particles to be moved to the electrodes on which the particles are adhering, column 18 lines 5-15, column 28 lines 55-65, pre-addressing or blanking.

As in claim 10, Gates et al. teaches of wherein the pre voltage applying component applies the pre-voltage, in a case that a potential difference between the display side electrodes and the rear side electrodes, in which at least one of the display side electrodes and the rear side electrodes do not contribute to image display, exceeds a predetermined value when the voltage applying component applies a voltage, figure 9A item 102 = 0 or +V.

As in claim 11, Gates et al. teaches of wherein a value of the voltage applied by the pre-voltage applying component is the same as a value of the voltage which corresponds to the potential difference which triggers particle movement, figure 3D items 2 and 4.

As in claim 12, Gates et al. teaches of wherein the types of particles comprise positively charged black particles and negatively charged white particles, column 15 lines 44-46.

As in claim 13, Gates et al. teaches of a image display device comprising: an image display medium which includes a display substrate, a rear substrate, **column 13 lines 50-52**, wherein either substrate refers to a display and rear corresponding to the display and rear electrodes

display side electrodes which are linearly disposed at a side of the display substrate in a predetermined direction, **column 14 lines 4-11 and 50-53, column 26 lines 1-13,**

rear side electrodes which are linearly disposed at the side of a rear substrate in a direction intersecting the predetermined direction, **column 14 lines 4-11 and 50-53, column 26 lines 1-13**, wherein the electrodes are provided in a matrix addressing scheme which includes intersecting electrodes.

and plural types of colored particles each having different charging characteristics, which are interposed and movable between the display side electrodes and the rear side electrodes, **column 24 lines 5-25**; wherein the red, blue, and green electrophoretic particles have different mobilities.

Further, Gates et al. teaches of the method comprising the steps of applying a voltage to a display side electrode and a rear side electrode, both selected to contribute to an image display, so that a potential difference generated there between corresponds to a potential difference which triggers particle movement, **figure 3D item 4**, column 19 lines 14-32, wherein the applied voltage causes the display change from figure 3A to figure 3C

and applying a voltage to a display side electrode and a rear side electrode, in which at least one of the display side electrodes and the rear side electrodes are not selected to contribute to the image display, to make a potential difference generated there between smaller than the potential difference which triggers particle movement, thereby inhibiting a movement of particles at least one of towards and away from an electrode not selected to contribute to the image display, **figure 9 item V/2, column 19 lines 45-65, figure 9A item 102 = 0, column 28 lines 30-65, column 19 lines 45-65**.

Wherein a pre-addressing, addressing, pre-blanking, and blanking, voltage component are achieved by a voltage source having three voltage values 0, V/2, and V, which are applied between the Vcom on the display side and discrete electrodes on the rear side of the display. Figures 3, 9, and 10 illustrate as such. Said pre-addressing voltage conditions the display but does not cause a particle migration. Said addressing component can be applied before or after the non particle migration voltage component.

wherein the voltage applying component applies a voltage to the display side electrodes and the rear side electrodes such that a potential difference between the display side electrodes contributing to image display and the display side electrodes not contributing to the image display, **figure 9A item Vcom=V/2**, is smaller than a potential difference between the rear side electrodes contributing to the image display and the rear side electrodes not contributing to the image display, **figure 9A item 102 = 0 or V**, thereby further inhibiting a movement of particles between the display side electrodes contributing to image display and the display side electrodes not contributing to the image, **column 26 lines 40-65, column 27-10**. Wherein Gates teaches of a common electrode 100 on a display side and discrete electrodes 104 or 106 on a rear side, wherein the voltage difference on the display side is V/2 and the voltage difference on the rear side is V, and therefore the display side difference is smaller because V/2 is smaller than V.

However Gates et al. only implicitly suggests the existence of a second or display substrate, **column 13 lines 50-53, and does the explicitly teaches of** said display substrate by way of illustration.

Inoue et al. teaches of said display, and rear electrode, figure 1 item 1, in the same particle based display as taught by Gates, wherein said implicit **display substrate feature would have been obvious** to the skilled artisan given its known use in the art as taught by Inoue et al., as found in claim 13.

Therefore it would have been obvious to the skilled artisan at the time of the invention to provide that Gates teaches of a second substrate as well known in the art and taught by Inoue et al., because Gates uses the term "either substrate", and Inoue teaches devices as taught by Gates are known to have two substrates, as found in claim 13.

As in claim 14, Gates et al. teaches of further comprising a step of applying the pre-voltage, in a case that a potential difference between the display side electrodes and the rear side electrodes, in which at least one of the display side electrodes and the rear side electrodes do not contribute to image display, exceeds a predetermined value when the voltage applying component applies a voltage, figure 9A item 102 = 0 or +V.

As in claim 15, Gates et al. teaches of wherein a value of the voltage applied by the pre-voltage applying component is the same as that which corresponds to the potential difference which triggers particle movement, figure 3D items 2 and 4.

As in claim 16, Gates et al. teaches of, wherein the types of particles comprise positively charged black particles and negatively charged white particles, column 15 lines 44-46.

As in claim 17, Gates et al. teaches of a image display device comprising: an image display medium which includes a display substrate, a rear substrate, **column 13 lines 50-52**, wherein either substrate refers to a display and rear corresponding to the display and rear electrodes

display side electrodes which are linearly disposed at a side of the display substrate in a predetermined direction, **column 14 lines 4-11 and 50-53, column 26 lines 1-13,**

rear side electrodes which are linearly disposed at the side of a rear substrate in a direction intersecting the predetermined direction, **column 14 lines 4-11 and 50-53, column 26 lines 1-13**, wherein the electrodes are provided in a matrix addressing scheme which includes intersecting electrodes.

and plural types of colored particles each having different charging characteristics, which are interposed and movable between the display side electrodes and the rear side electrodes, **column 24 lines 5-25**; wherein the red, blue, and green electrophoretic particles have different mobilities..

Further, Gates et al. teaches of, the method comprising the steps of: applying a voltage to a display side electrode and a rear side electrode, both selected to contribute to an image display, so that a potential difference generated there between corresponds to a potential difference which triggers particle movement, **figure 3D item 4**, column 19 lines 14-32, wherein the applied voltage causes the display change from figure 3A to figure 3C;

and applying a voltage to a rear side electrodes to generate a potential difference which is smaller than the potential difference which triggers particle movement between the rear side electrodes and a display side electrodes both not selected to contribute to the image display, and which is smaller than the potential difference which triggers particles movement between a rear side electrode not selected to contribute to the image display and a display the display side electrode selected to contribute to the image display, thereby inhibiting a movement of particles at least one of towards and away from an electrode not

selected to contribute to the image display, **figure 9 item V/2, column 19 lines 45-65, figure 9A item 102 = 0, column 28 lines 30-65, column 19 lines 45-65.**

Wherein a pre-addressing, addressing, pre-blanking, and blanking, voltage component are achieved by a voltage source having three voltage values 0, V/2, and V, which are applied between the Vcom on the display side and discrete electrodes on the rear side of the display. Figures 3, 9, and 10 illustrate as such. Said pre-addressing voltage conditions the display but does not cause a particle migration. Said addressing component can be applied before or after the non particle migration voltage component. Wherein as amended said language of "wherein a time period in which the voltage is applied that contributes to the image display overlaps with a time period in which the voltage is applied that does not contribute to the image display" is not explicitly taught by Gates et al.. As shown in figure 3, Gates illustrates the voltage differential applied between the first and second electrodes, causing the particles to migrate.

wherein the voltage applying component applies a voltage to the display side electrodes and the rear side electrodes such that a potential difference between the display side electrodes contributing to image display and the display side electrodes not contributing to the image display, **figure 9A item Vcom=V/2**, is smaller than a potential difference between the rear side electrodes contributing to the image display and the rear side electrodes not contributing to the image

display, **figure 9A item 102 = 0 or V**, thereby further inhibiting a movement of particles between the display side electrodes contributing to image display and the display side electrodes not contributing to the image, **column 26 lines 40-65, column 27-10**. Wherein Gates teaches of a common electrode 100 on a display side and discrete electrodes 104 or 106 on a rear side, wherein the voltage difference on the display side is V/2 and the voltage difference on the rear side is V, and therefore the display side difference is smaller because V/2 is smaller than V.

However Gates et al. only implicitly suggests the existence of a second or display substrate, **column 13 lines 50-53, and does the explicitly teaches of** said display substrate by way of illustration.

Inoue et al. teaches of said display, and rear electrode, figure 1 item 1, in the same particle based display as taught by Gates, wherein said implicit **display substrate feature would have been obvious** to the skilled artisan given its known use in the art as taught by Inoue et al., as found in claim 17.

Therefore it would have been obvious to the skilled artisan at the time of the invention to provide that Gates teaches of a second substrate as well known in the art and taught by Inoue et al., because Gates uses the term "either

substrate", and Inoue teaches devices as taught by Gates are known to have two substrates, as found in claim 17.

As in claim 18, Gates et al. teaches of further comprising a step of applying the pre-voltage, in a case that a potential difference between the display side electrodes and the rear side electrodes, in which at least one of the display side electrodes and the rear side electrodes do not contribute to image display, exceeds a predetermined value when the voltage applying component applies a voltage, figure 9A item 102 = 0 or +V.

As in claim 19, Gates et al. teaches of wherein a value of the voltage applied by the pre-voltage applying component is the same as a value of the voltage which corresponds to the potential difference which triggers particle movement, figure 3D items 2 and 4.

As in claim 20, Gates et al. teaches of wherein the types of particles comprise positively charged black particles and negatively charged white particles, column 15 lines 44-46.

Response to Arguments

2. Applicant's arguments filed on 6/8/2006 have been fully considered but are moot in view of the new grounds for rejection. The Examiner has modified the

rejection to make corrections to any errors in addressing the limitations of the claims. **Applicant argues** none of the drive schemes described in Gates address voltage levels applied to display side electrodes and reverse side electrodes that do not contribute to the display. The Examiner disagrees. In figure 9 Gates shows that the display side has a voltage V/2 applied and the rear side has a voltage 0 or V being applied. As shown in column 19 lines 45-65, column 26 1-65, and column 27 lines 1-10, voltage values are applied to the display and rear electrodes that are below the threshold required to cause a migration of the particles, therefore keeping the non displayed pixels in the non displayed state. **Applicant argues** Gates only address drive scheme and voltage relationships related to "electrodes contributing to image display", not voltage relationships between "display side electrodes contributing to an image display and display side electrodes not contributing the image display" or between "rear side electrodes contributing to the image display and the rear side electrodes not contributing to the image display". The Examiner disagrees. As shown in column 19 lines 45-65, Gates teaches many bistable displays, especially electrophoretic displays, exhibit a threshold behavior such that signals below a certain threshold value do not cause the display to change its display state even if the signal is applied for a long time.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is **(571) 272-7673**. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on **(571) 272-7681**. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571)-273-8300.

4. Please note that all future correspondences directed to David L. Lewis must be sent to Art Unit 2629.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: David L. Lewis

August 21, 2006